

## **AMENDMENTS TO THE CLAIMS**

This listing of claims will replace all prior versions, and listings of claims, in the application.

### **Listing of Claims**

Claim 1 (currently amended): A method for the determination of a disease state in a human subject, said method comprising the steps of:

- (a) measuring at least one optical property at a first area on a body part of an arm of said human subject to obtain a first set of data, said first area being subjected to a first temperature program;
- (b) measuring at least one optical property at a second area on said body part of said arm to obtain a second set of data, said second area being subjected to a second temperature program, said second temperature program being different from the first temperature program, said second area of said body part of said arm being morphologically similar to, adjacent to, but not substantially overlapping with said first area of said body part of said arm;
- (c) inserting said first set of data and said second set of data into a mathematical relationship to calculate a mathematical output; and
- (d) comparing said mathematical output to a category selector to determine said disease state of said human subject.

Claim 2 (original): The method of claim 1, wherein said optical properties are measured with light having a wavelength ranging from about 400 nm to about 2000 nm.

Claim 3 (original): The method of claim 1, wherein said optical properties are measured by a diffuse reflectance technique.

Claim 4 (original): The method of claim 1, wherein measuring steps (a) and (b) are performed simultaneously.

Claim 5 (original): The method of claim 1, wherein measuring steps (a) and (b) are performed sequentially.

Claim 6 (original): The method of claim 1, wherein said temperature programs employ temperatures ranging from about 10 °C to about 45 °C.

Claim 7 (original): The method of claim 1, wherein said disease state is selected from the group consisting of diabetic state, dermal disease state, neoplastic disease state, and vascular disease state.

Claim 8 (currently amended): The method of claim 1, wherein said mathematical relationship of step (c) is derived by a method comprising the steps of:

(a) providing a population comprising a sufficient number of human subjects to establish a category selector, said population comprising a first sub-population comprising a sufficient number of human subjects in said disease state and a second sub-population comprising a sufficient number of human subjects not in said disease state;

(b) for each of said number of human subjects in said population:

(1) measuring at least one optical property at a first area on a body part of an arm of each of said human subjects to obtain a first set of data, said first area being subjected to a first temperature program;

(2) measuring at least one optical property at a second area on said body part of said arm of each of said human subjects to obtain a second set of data, said second area on said part of said arm of each of said human subjects being subjected to a second temperature program, said second temperature program being different from the first temperature program, said second area of said body part of said arm of each of said human subjects being morphologically similar to, adjacent to, but not substantially

overlapping with said first area of said ~~body~~ part of said arm of each of said human subjects; and

(c) establishing a mathematical relationship between (i) said optical properties of said first set of data and said second set of data and (ii) said disease state.

Claim 9 (currently amended): A method for determining concentration of an analyte in a ~~body~~ part of an arm of a human subject, said method comprising the steps of:

(a) measuring at least one optical property at a first area on said ~~body~~ part of said arm to obtain a first set of data, said first area being subjected to a first temperature program;

(b) measuring at least one optical property at a second area on said ~~body~~ part of said arm to obtain a second set of data, said second area being subjected to a second temperature program, said second temperature program being different from the first temperature program, said second area of said ~~body~~ part of said arm being morphologically similar to said first area of said ~~body~~ part of said arm, said second area of said ~~body~~ part of said arm not substantially overlapping with said first area of said ~~body~~ part of said arm, and said second area of said ~~body~~ part of said arm being adjacent to said first area of said ~~body~~ part of said arm; and

(c) inserting said first set of data and said second set of data into a mathematical relationship to calculate said concentration of said analyte.

Claim 10 (original): The method of claim 9, wherein said optical properties are measured with light having a wavelength ranging from about 400 nm to about 2000 nm.

Claim 11 (original): The method of claim 9, wherein said optical properties are measured by a diffuse reflectance technique.

Claim 12 (original): The method of claim 9, wherein measuring steps (a) and (b) are performed simultaneously.

Claim 13 (original): The method of claim 9, wherein measuring steps (a) and (b) are performed sequentially.

Claim 14 (original): The method of claim 9, wherein said temperature programs employ temperatures ranging from about 10 °C to about 45 °C.

Claim 15 (currently amended): The method of claim 9, wherein said mathematical relationship of step (c) is derived by a method comprising the steps of:

- (a) providing a population comprising a sufficient number of human subjects to establish a statistically meaningful mathematical relationship;
- (b) for each of said number of human subjects in said population:
  - (1) measuring at least one optical property at a first area on said body part of said arm of each of said human subjects to obtain a first set of data, said first area being subjected to a first temperature program;
  - (2) measuring at least one optical property at a second area on said body part of said arm of each of said human subjects to obtain a second set of data, said second area of said body part of said arm of each of said human subjects being subjected to a second temperature program, said second temperature program being different from the first temperature program, said second area of said body part of said arm of each of said human subjects being morphologically similar to said first area of said body part of said arm of each of said human subjects, said second area of said body part of said arm of each of said human subjects not substantially overlapping with said first area of said body part of said arm of each of said human subjects, and said second area of said body part of said arm of each of said human subjects being adjacent to said first

area of said ~~body~~ part of said arm of each of said human subjects;  
and

(c) establishing a mathematical relationship between (i) said optical properties of said first set of data and said second set of data and (ii) said concentration of analyte.

Claim 16 (original): The method of claim 9, wherein said analyte is selected from the group consisting of glucose, hemoglobin, hematocrit value, tissue water content, urea, and bilirubin.

Claim 17 (currently amended): An apparatus for determining a disease state of a human subject or concentration of an analyte in a ~~body~~ part of an arm of a human subject, said apparatus comprising:

- (a) at least one source of light capable of illuminating at least two morphologically similar, adjacent, not substantially overlapping areas of said ~~body~~ part of said arm with light;
- (b) at least one light collecting element to collect light re-emitted from said at least two areas of said ~~body~~ part of said arm;
- (c) a detector for measuring the intensity of said re-emitted light collected at said two areas of said ~~body~~ part of said arm; and
- (d) a controller for controlling the temperature of said at least two areas of said ~~body~~ part of said arm simultaneously by means of temperature programs.

Claim 18 (currently amended): The apparatus of claim 17, further including (e) a computer for correlating the intensity of the re-emitted light collected at said at least two areas of said ~~body~~ part of said arm with said concentration of an analyte or said disease state, provided that said at least two areas of said ~~body~~ part of said arm are morphologically similar, adjacent, and substantially non-overlapping.